THE VETERINARY RECORD

A Weekly Journal for the Profession.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S.

No. 1422 OCTOBER 9, 1915. VOL. XXVIII.

MEDICAL AND VETERINARY POST-MORTEM OPPORTUNITIES.

Some years ago a well-known London Coroner, not himself a medical man, aroused considerable feeling in the medical profession by insisting that all post-mortem examinations made for inquests over which he presided should be made by a professional pathologist. He did so on the broad ground that the average medical practitioner's experience of post-mortem examinations is not sufficient to enable him to speak with authority upon their results. In the end the Coroner got his way, though not without considerable opposition from medical men, many of whom asserted roundly that the average practitioner was perfectly capable of conducting and adjudicating upon post-mortem examinations If such a claim could be made for medical practitioners with their limited opportunities, what ought we to be able to claim for the members of our own profession with their infinitely wider ones?

Broadly speaking, a medical man in general practice hardly ever—often never—makes a post-mortem examination except for a Coroner's inquest. Not many general practitioners appear often at inquests—some do so very rarely, for practitioners are plentiful, and inquests comparatively few. Further, in very many inquests no post-mortem examination is made. Thus, no one can deny that the average medical practitioner's opportunities of post-mortem observation are scanty in the extreme; but that cannot be said of the veterinary practitioner.

We all know that those opportunities are great—that most of us, in the regular course of practice, do far more post-mortem work for which we are paid than any family doctor, and that nearly all of us can do very many more for the reward of the work itself. Those who utilise all their opportunities, with the material found in an average-sized practice, may, and often do become very good judges of naked-eye post-mortem lesions. And though few clinicians can become very expert microscopists, there is no reason why the microscope should not be used in practice much more often than it is. Section cutting, for instance, is not so difficult an undertaking as some suppose; and one who takes it up may do quite a considerable amount of pathological histology with very little expense, and with great benefit to his naked-eye post-mortem work.

It is true that the general practitioner of either human or veterinary medicine can never reach the level of the professional pathologist. But the veterinary practitioner ought to approach far nearer to that level than the medical man.

SCROTAL HERNIA IN A SHIRE FOAL: STRANGULATION OF SAME: TREATMENT BY RADICAL OPERATION: RECOVERY.

By H. CAULTON REEKS, F.R.C.V.S., Spalding.

A brief report of this case will, I think, be interesting. It illustrates two points particularly. First, the amount of trouble into which an owner can plunge himself by disregarding the advice of his veterinary surgeon. Second, the impunity with which the abdomen may be opened up and the intestines handled provided there is due observance of strict antiseptic precautions.

My attention was first called to the case in June of this year (1915). The patient, a young shire foal, of some considerable value, was the subject of an ordinary scrotal hernia (one-sided), a quantity of what was evidently intestine protruding through the left inguinal ring and filling the left scrotal sac. The advice then given to the owner, was the advice I always give in these cases: "Allow the animal to remain untreated and the probability is that when he is a year older there will he no abnormality to be noticed. All that you have to bear in mind is to warn the operator who castrates him, should that be done."

This advice the owner disregarded. Someone or other of his friends recommended the use of a truss. The truss was obtained, and on July 14th, at 2 p.m., was applied, the foal at the time being out at grass with its mother.

On July 15, at about 8 a.m. the foal was found rolling about in the field, constantly up and down, and evidently suffering from acute colic pains. The truss was then removed, the circumstances explained to me on the telephone, and my attendance requested.

The attendance was made by my assistant, Mr. James Conner, M.R.C.V.S. On his arrival he found that the case had been in no way exaggerated. The foal was constantly up and down, and in agonies of pain, plainly suffering from strangulation of the herniated bowel. The amount of scrotal swelling now, according to Mr. Conner's description, was immense—part, no doubt, inflammatory exudation into the scrotal sac, part an œdematous filling of the scrotal tissues. In fact, the case to all appearances was hopeless.

However, the foal was cast (with the side-lines), the hind limbs spread well open, and an attempt made with some considerable degree of force to press the contents of the scrotal sac back again

into the abdomen. This attempt was unsuccessful. Accordingly, seeing the futility of attempting surgical interference with the animal in the condition it then was, Mr. Conner simply gave a fatal prognosis, and, after administering a full dose of castor oil and methylated ether, left the case more or less to chance; the only instructions to the attendant being to administer small doses of ether every two hours as a stimulant. This was the evening of July 15th.

On the following morning, July 16th, the foal was visited again, and found in much the same condition, save that the violence of the pains had somewhat abated. He was still, however, in constant pain, and, while treatment with stimulants was persisted in, the case was still regarded as hopeless.

In the evening of this day, however, the pains subsided, and on the following morning it was plain to see that the foal had recovered, or, at any rate, that immediate death from the condition was not now to be feared.

Both Mr. Conner and myself now decided that our case was practically *in statu quo*, and, that although we still had a huge enlargement of the scrotum (the size of which may be gathered from the accompanying photograph) it would still remain, after the natural removal of the inflammatory exudate and the œdema, that we simply had on our hands a foal with scrotal hernia, the natural reduction of which might still be looked for. This, however, was with the reservation that "there were no inflammatory adhesions between the scrotal sac and the peritoneum of the bowel wall."

Events, however, proved that the case was not so easily to recover. The animal now had periodical attacks of colic, and, arguing from that that adhesions had taken place, I decided to operate. My frame of mind regarding the matter may be gathered from the tone of my letter to the owner, which letter I give below:—

Dear Mr. . . . With reference to the ruptured foal. I have seen him again to-day, and feel quite confident he will be worthless as he is. Moreover, he now has occasional colic attacks, one of which will probably carry him off. Further, I should say that, owing to the inflamed condition of the parts a week or so back, there are now fibrous adhesions between portions of the ruptured bowel and the scrotal sac, rendering a natural return of the rupture now impossible.

To my mind an operation is called for. This would consist in opening up the scrotal sac (under chloroform, of course) breaking down what adhesions might be met with, placing the herniated portions of bowel back into the abdomen, and finally suturing and plugging. At the same time the foal would have to be castrated.

To be quite frank, I do not think the chances would be much in favour of the foal coming through it successfully. The operation would be a grave one. At the same time it is his *only* chance."

The reply I received to this was a laconic two lines on a post-card: "I know you are a good operator. Do what you like." This was giving me *carte blanche* with a vengeance, for, as I then remarked to Mr. Conner, "If we accidentally remove the animal's head we shall evidently be expected to replace it."

However, on July 30th, after a preliminary four days' fasting, the foal was operated on. He was cast with the side-lines, and packed with bolsters into a convenient position on his back, the parts to be operated on being then thoroughly cleansed with ether and a pad of lint, and afterwards painted with a solution of iodine. Afterwards, the foal was chloroformed and the operation commenced.

A longitudinal incision some six inches long was made over the left scrotal sac, a little to the side of the median raphe. Immediately the sac was punctured a large amount of inflammatory fluid escaped, and the contents of the sac were exposed. As we had surmised, these proved to be small intestines.

Inserting my right hand into the sac, I now expected to be able to return the bowel inch by inch through the inguinal opening. I had not made the attempt for long, however, before it soon became apparent that reduction was not to be arrived at in that manner, and this notwithstanding I could discover no adhesions, and could, moreover, easily insert two fingers into the inguinal opening.

During this procedure it needed the two hands of my assistant tightly clasping the lips of the scrotal wound round the wrist of my inserted hand to prevent the intestines bubbling through into the open.

Seeing now that reduction was to be difficult, I am afraid that my efforts at this juncture became somewhat desperate. From above, downwards, I exerted pressure, first with the open palm, and afterwards with the closed fist, hoping even now that such would induce the return of the bowel. But it was not to be. Finally, I was compelled to desist, and, with my hand still in the scrotum, to hold a hurried consultation with Mr. Conner as to what should be done.

Probably what now was needed was a bistoury caché. With this the inguinal canal might have been enlarged and return of the bowel rendered easier. This instrument, however, was not to hand, and it was plainly evident that to use a naked scalpel would have been highly dangerous, if not impossible.

Since it was plain now that reduction of the bowel was not to be brought about by pressure or other means from the outside inwards, it was equally plain that the only alternative was taxis on the bowel exerted by way of the abdomen. As to the most ready way of effecting this, the previous exploration of the two fingers of my right hand in the inguinal ring had given me the clue. During this exploration I had noticed that the two exploring fingers readily impinged on the floor of the abdominal wall, at a point just in front of the

inguinal ring, and to the left side of the linea alba. In fact, while in this position they were easily palpated from the outside by the fingers of the left hand.

What I did now, therefore, was to take a scalpel in the left hand, and with it make an incision carefully down on the point indicated by the fingers of the right hand still protruded, by way of the scrotum, through the inguinal ring. Through this incision, the fingers of left hand (held cone-wise) were inserted, and the opening gradually forced to admit the left hand and wrist into the abdomen.

It was now a comparatively easy matter to draw the intestine inch by inch from its abnormal position in the scrotum back again into the abdomen, but not nearly so easy as the mere writing of it would imply. In fact, as each inch or so was gained I found it necessary at the same time, with the fingers of the right hand in the scrotum, to press on the intestine still in the ring, in order to prevent its return into the scrotum.

As to the length of intestine formerly in the scrotum and in this manner regained, I found it impossible to judge. To me, at one time, it seemed almost endless.

Just before the last foot or so was reached, however, it began to thread through easily, and it was then that we were able to see what had been the cause of the violent colic attack at the time the truss was applied, and also to understand the reason for the frequent attacks of colic subsequent to recovery from the first severe pains. A portion of the intestine, six to eight inches long, the last as it happened to have to be threaded through the inguinal ring, was enormously thickened, almost leathery in consistence, and with a mottled dark red and purple colouration, indicating plainly enough that this portion it was which had been bruised and strangulated. The same thought struck both Mr. Conner and myself at once. This portion had evidently been trapped between the truss and the animal's thigh.

Stagnation of the ingesta in this injured portion of intestine, and not, as we had formerly surmised, adhesions, had been the cause of the periodic attacks of colic occurring after removal of the truss.

The question now to decide was: "Is it wise to return this evidently diseased portion of intestine to the abdomen, and then to expect recovery of our patient, or should re-section of the diseased portion and subsequent suturing up of its healthy ends be attempted before concluding reduction?"

Our united opinion was that the foal had now suffered as much at our hands as we could reasonably expect him to endure, having been in deep anæthesia for nearly an hour, and having during that time been pretty roughly handled. Accordingly the inflamed length of intestine was returned to the abdomen, with the hope that regenerative changes would take place in the wall, and ultimate recovery of the patient result.

Directly this last loop of intestine was returned, the testicle of this side came into sight, rendering a search for it unnecessary. This was removed with the ecraseur, the stump of the cord returned to the abdomen, and the operation practically concluded. There only remained to suture and to suitably dress.

The wound in the abdominal floor received our attention first. After first dressing the lips with a solution of iodine, and also painting the immediately surrounding skin with the same antiseptic, it was drawn together with interrupted sutures of silk. In doing this it was necessary to use an antiseptic pad of lint laid over the protruding intestines in order to keep them within the abdomen. As the sutures one by one were inserted this pad was gradually withdrawn, and the last sutures safely placed. The inguinal canal was then closed in the same manner, but no protrusion of intestines here interfered with the placing of the sutures. Beyond the difficulty of inserting the sutures in such a situation (an ordinary half-curved needle was used) nothing untoward was to be noticed, and with the placing of the last sutures the anæsthesia was discontinued.

Here the condition of the now empty scrotum may be remarked on. Pulling apart the lips of the incision we had made exposed to view a cavity into which could easily have been placed a football of average size. The interior of the cavity showed clearly enough the inflammatory changes that had been going on. In colour it too, like the injured intestine, was mottled deep red and purple, while the walls of the sac were found to be enormously thickened, in places quite two to three inches. It was debated now whether or not some portion of this sac should be excised. In previous cases, however, I had seen the marvellous manner in which resorption of such thickening occurs directly the cause of irritation is removed. I, therefore, decided to allow it to remain.

The interior of the cavity was now dressed with a solution of iodine, and into it were placed lint pads, each lint pad containing within its folds boracic acid and iodoform in powder. Over these the lips of the scrotal wound were drawn with figure-of-8 sutures, and the last steps in the operation finished. The foal was released from the side-lines and allowed to rise.

He was allowed now to return to his dam, and very shortly after was sucking. From now (July 30th) until August 18th, the progress of the case was uneventful. There was certainly some degree of surgical fever, but never sufficient to occasion us alarm, and never anything in the foal's condition to lead us to expect any other than a favourable issue. At intervals of two days the packing in the scrotum was removed and renewed, each time being held in position by one or two sutures. At the end of a week even this was discontinued, and the cavity simply washed out twice daily with a perchloride solution.

Beyond a little suppuration the wound in the abdominal wall, too, gave no trouble; what suppuration there was being easily kept in check with a syringe and a weak solution of carbolic acid. As

a matter of fact, towards the end of the fortnight following the operation I began to think the foal was going to make an uninterrupted recovery. In this we were disappointed. On August 18th he had another of the colic attacks to which, during the time just prior to operation, we had become accustomed.

This, however, was not alarming, especially as the attendant, pleased with the progress of the case, had become somewhat careless in the matter of dieting his patient. The case quickly responded to a dose of castor oil and ether, while cutting off his "chop," and restricting him for a while to a diet of bran, linseed, and a little grass served to prevent a recurrence of the trouble.

Now, at the time of writing, Oct. 4th, the foal has the appearance of having entirely recovered. The thickening of the scrotum, which at one time was huge, has gradually disappeared, and nothing now remains to indicate operative interference save a small amount of thickening that one can comfortably hold in the palm of the hand. This, too, no doubt, will disappear with time.

Remarks.—I need hardly say that *everything* used in the actual operation was rendered aseptic on the day previous by boiling—even to the supply of lint pads. For these latter I was at one stage of the operation profoundly thankful. That stage was during the suturing up of the abdominal wound, when the intestines which we were endeavouring to confine within their normal bounds appeared to bubble out from the wound with a persistency that was almost diabolical.

On a previous occasion I have drawn attention to the use of such pads when performing an abdominal operation. (Vide "Journal of Comparative Pathology and Therapeutics," Vol. xxi. page 346), and I would add here that anyone who essays to open up the abdomen and afterwards suture without some such means of holding back the intestines, is simply courting failure. I would like to add, too, that while this operation was so entirely successful, such success was due not only to the means employed, but also to the anæsthetist, who kept the patient beautifully under the whole of the time, and to the very able help rendered me by my assistant, Mr. Conner.

STRANGLES OUTBREAKS.

In offering suggestions regarding the origin of an outbreak of this disease, one has both the advantages and disadvantages accruing from the absence of any clearly defined border-line that might mark off the condition during its early stages from an ordinary and non-specific catarrh.

In this respect our clinical knowledge of the disease is not a perfect one, and, before the glands of the intermaxillary space have become infected, none can say exactly when a case that has been diagnosed simply as catarrh ought to be reconsidered as a case of strangles.

By many the glands are looked upon as predilection seats, and the absence of any glandular changes is taken to indicate the absence of the disease. And this in spite of the fact that before the first case showing suppuration of the glands is observed, either the animal itself, or several others in close contact with it have been showing for some days symptoms of a purulent nasal catarrh.

But very far from being of a primary nature, these glandular changes are distinctly secondary, because it is simply due to their draining an infected area that the glands become involved, and they are no more predilection seats than are the glands of the axilla of man in the case of septic infection of a wound in the hand.

A man may have a poisoned finger without the glands of the axilla suppurating and bursting, and in the same way a horse may have strangles without the glands of the intermaxillary space suppurating and bursting.

Excise these glands altogether, and the horse will still be prone to an attack of strangles! There will then be no abscess formation between the jaws, but there will be the specific catarrh which, if it progresses far enough, will involve other and more distant glands of the body, and produce what is commonly known as "bastard strangles," thereby showing that although the cleaned-out intermaxillary space appeared quite healthy, the initial catarrh was no other disease than strangles.

The disease, as it is usually known, with catarrh, and inflammation or suppuration of the glands of the intermaxillary space, almost invariably breaks out wherever a number of young horses are brought together, and the following conditions have been noticed to be important predisposing factors: (*a*) the animals have had a journey by rail, road or sea; or (*b*) they have been kept together in large stables or sheds where intermixing is allowed, and the ventilation is bad. (In contradistinction to this, cases are not nearly so frequently met with when young animals are brought in singly, and kept in boxes by themselves).

All endeavour to prevent the outbreak generally fails. The animals may be carefully inspected before commencing their journey, and again at their destination before being admitted to contact with each other, but the usual result is failure to prevent an outbreak.

The layman asks himself how it can be explained, and comes to the conclusion that these clinical examinations have been of a very cursory nature; but the veterinary surgeon says the explanation is either that the animals infected were incubating the disease at the time of inspection without showing any clinical symptoms, or that during their journey one or more of the animals had been exposed to mediate or immediate contagion.

In the absence of proof to the contrary, these two theories are usually accepted as explaining the outbreak; but should one be content with these explanations when others can be brought forward?

Firstly, is it not possible that the causal organism, in a more or less harmless state, has a fairly wide distribution, even to such an extent as to be some-

times discoverable in this state in the healthy nasal passage, and all that is necessary to give it a start in a pathogenic direction is something to reduce the vitality of a young animal, *e.g.*, a tiring journey by rail, road, or sea, with all its attendant hardships and discomforts? or,

Secondly, is it not conceivable that these organisms, widely distributed or otherwise, may exist normally in a more or less non-pathogenic condition, and require to be passed from one animal to another before they can become sufficiently virulent to cause serious disease, in much the same way as the virulence of rabies is increased by passage through the rabbit?

This latter theory is the more acceptable because it accounts for the increased prevalence of the disease where many young animals are kept together.

To sum up in a few words, one could say:—*Strangles has almost invariably been observed to follow an attack of an apparently non-specific catarrh, and it is conceivable that this catarrhal stage represents one during which the specific organisms of the disease, while being capable of causing an inflammation of the nasal mucous membrane, are incapable of causing a more serious lesion; and that while this catarrh is being transferred from one animal to another, by a process of passage, the organisms are acquiring a gradual exaltation of virulence which ultimately renders them sufficiently potent to invade, and produce suppuration of, the glands situated in the intermaxillary space.*

The animal with least resistance will thus furnish the first sporadic case, and the virulent strain of organisms, being by this time firmly established, the disease assumes a very contagious nature, passing from one young animal to another with its usual serious consequences.

That adult horses, when brought together under similar conditions, are not so susceptible to the disease, is most probably due to the immunity which they have acquired, either with maturity, or through having experienced a former attack. The latter not necessarily being a complete attack of strangles, but simply a mild catarrh.

T. Lishman, Capt. A.V.C.

OBSERVATIONS UPON GLANDERS IN MULES AND THE MALLEIN TEST.

By W. M. Scott, F.R.C.V.S., F.R.M.S.

The following observations are put forward not so much with the view of making dogmatic assertions or attempting to upset orthodox principles, as with the sincere desire of classifying some points which we clinicians, at least in this country, are not fully conversant with, and in the hope that the debatable points raised may be discussed by those whose experience in mule practice is such that they can speak with authority. Circumstances have been of such a character as to specially favour me to make these observations, and I feel it is a privilege, as well as a duty that I owe to the profession, so record them at length.

To what extent do the cardinal symptoms of glanders in the mule coincide with those in the horse?

I may at once say the practitioner who by past experience has come to look upon mallein as an almost infallible diagnostic agent, or who places great reliance upon the cardinal clinical data as seen in equines, will be sadly disappointed if he carries these tenets into mule practice.

Glanders in the mule tends to run an acute course, while in the horse a chronic course more or less is the rule. Further, in the mule the disease inclines to become and remain a localised one, while in the horse the deeper and more vital structures are invaded. As glanders affecting the mule confines its ravages to the upper portions of the respiratory tract principally, suffice it for me in drawing comparisons to allude only to a similar state in the horse.

Nasal discharge. In the horse this is usually *unilateral*, in the mule more often *bilateral*.

In the horse the pus tends to an amber colour and is very adhesive. In the mule it is less malignant looking, more muco-purulent, grey, or almost white in colour, and tinged with blood. In advanced cases the discharge is whipped up into foam and often pink in colour, owing to hæmorrhagic effusion.

In the horse respiratory nasal stertor may be present, in the mule always so; and in advanced cases the nasal obstruction is so complete that forced oral respiration takes place. This is partly owing to œdema of the nasal mucosæ, but much much more to bloody effusion into the nasal cavities and the accumulation of blood clot, which, by reason of its excessive coagulability, renders the obstruction all the more complete.

Naso-mucosal nodules. In the horse, these, even with the aid of a speculum and torch, are not always visible, and when seen the nodular stage may escape detection, its place being taken by an ulcer which is often covered by an angry-looking tenacious scab.

In the mule, nodular deposits without ulceration or scabbing appears to prove the rule: the former appearing as circumscribed, elevated, hard, grey nodules, about the size of small peas, which show little tendency to ulceration.

Lymphatic glandular enlargement. In the horse a fixed, swollen sub-maxillary lymphatic gland is the rule; in the mule it is the exception, and, even when present, its presence carries with it no significance.

Thermic registrations. In the pre-mallein days clinicians looked upon the thermometer with great reliance in assisting them to detect glandered subjects in a stud, and the interpretations of the temperature chart were fairly constant. In the mule they are very inconstant. I have seen an animal suffering from glanders of a most acute form and the maximum registered temperature only standing at 102.8° F., while, on the other hand, a case apparently running a less acute course has given a temperature 105° F. The thermometer in the mule, therefore, does not appear to be very dependable.

It may worth noting here the normal temperature of the mule varies from 1° to 2° below that of the horse, and this fact may partly account for the unreliable thermic reaction we find after mallein injection.

Systemic disturbances. In the horse these may be slight, absent, or pronounced, depending principally upon the aggressive force of the bacteria on the one hand, and the immunizing body factors on the other.

In the mule these may be absent altogether, and even in very acute cases the temperature, respiration, pulse, may be only slightly removed from normal; while the physiological processes of assimilation and elimination may be quite natural.

Is mallein as a diagnostic agent as reliable in the mule as it is in the horse?

This question can only be answered by an emphatic negative, and for this negation there must be some reason or reasons.

The horse and the mule are one and the same species, although the latter is a lateral branch of of the former. I think a solution to this question is to be found not in the mallein alone, but in both mallein and mule, and to which belongs the greater credit in the reaction failure I am not in a position to say, although I incline to the opinion it is the mule itself.

(*a*) Mallein is a potent biological product derived from the bacillus mallei, which when injected into a glandered subject produces a characteristic reaction. This reaction may be due to bacterial proteins, to endotoxins, or to both. The reaction is local, focal, and thermic, and as such one must view the *antigenic* action of mallein in the light of a vaccine — at least the analogy is very close indeed.

It has been suggested that mallein is toxic. In the proper acceptation of the term, mallein is not toxic in its action. When injected into a glandered subject a remarkable degree of hyper-susceptibility takes place and it is the underlying anaphylactic processes which are responsible for the reactions noticed.

To prove mallein is not truly toxic, I have injected as much as 8 c.c. into a non-glandered mule without ill effect. If we accept mallein in the light of a vaccine it appears to me that, if we desire to obtain the best potential results in mule practice, mallein should be procured from bacilli whose habitat originally was the body of the mule and not the horse.

We must remember the mallein in glanders as well as the tuberculin in tuberculosis possesses a high specificity. If mallein is brought into contact with the skin or the mucosæ which is, as already suggested, a bacterial protein, and the corresponding antibody is to be found in the body-fluids such as one expects to find in a glandered subject, the protein will be digested and the poisonous product combined with the endotoxin will permeate the local tissues, producing the characteristic local reaction. Fortunately this protein-antibody reaction is highly specific; in truth, it is upon this specificity, and nothing less, that the real diagnostic value of such antigens as mallein and tuberculin depend. I therefore maintain that this phenomenon is so pronounced in its effects and exacting in its principles that the antigen in use for the mule should come from a mule source.

To support this view take for example the streptococcal antigen. Every immunizer knows there are many strains of streptococci, at the one end of the scale we find the very pathogenic and aggressive groups, and at the other representatives of an almost non-pathogenic class. Now if a vaccine was made from the bacteria belonging to the non-pathogenic group and injected into an animal suffering from a bacterial invasion belonging to the pathogenic class, the reactive results and the consequent therapeutical value of the antigen likewise would be *nil*. Here again a high degree of specificity exists, and it is upon this that an autogenous vaccine possesses a higher therapeutical value than a stock vaccine.

(*b*) The mule, compared with the horse, enjoys, speaking generally, a greater immunity to bacterial invasion. To this one must attribute a more complete and a more active immunizing and protective mechanism.

No sooner does an animal become invaded by pathogenic bacteria than the protective forces are brought into increased activity. The body cells and the immune bodies attack the invaders, and if the aggression of the latter is limited and eventually thwarted recovery will follow. Speaking generally, a localised bacterial infection, if kept as such, suggests that the protective forces have got the aggressors well in hand; while, on the contrary, a generalised infection suggests a breakdown in the immunizing mechanism. Reasoning thus, the mule is more resistant to glanders than the horse, for in the former we find the bacterial invasion seldom gets beyond the upper air passages, at least to play permanent havoc; while in the horse the bacillus mallei carries its destructive work into the parenchyma of deep and vital organs.

No sooner, then, do the bacilli enter the body, either local or focal, than the cellular receptors are actively cast off to fasten on to free toxins. Now in a glandered foci large numbers of sessile receptors are to be found which would appear to possess greater affinity for the antigen (mallein) than do the receptors belonging to normal cells found in glanders-free animals, and the more susceptible the cells and receptors are to the antigen the greater the reaction.

To obtain, therefore, a diagnostic mallein reaction in the mule, it appears to me we must have a more specific antigen on the lines indicated, but I am not aware that such a mallein can be procured in this country.

The next alternative is to make it more potent by increasing the dose, and this we have put into practice by giving 2 c.c. doses.

I have tested in all 2666 mules with mallein. The first thousand had 1 c.c. as a dose. One of this number which, with the others, gave negative results, showed certain symptoms suggestive of

SCROTAL HERNIA—MR. H. CAULTON REEKS' CASE.

36 hours after injection.

48 hours after injection.

MULE No. 4. The intra-dermo-palpebral test. Note swollen upper eye-lid, the closed eye and the muco-purulent discharge.

MR. W. M. SCOTT'S CASE.

glanders and was isolated for observation. Ten days later it was tested with 2 c.c. mallein, with the following results:—

Initial Temp.	12th	15th	18th	24th hour after injection.
100.1 F.	102°	103·1°	104.4°	104°

The local reaction was 5 × 7½ inches.

I am quite convinced that the 1 c.c. dose of mallein in mules is a useless quantum, and that the interpretations after the injections are not only useless but dangerous.

Further, absolute reliance should not be placed upon any one reaction to the exclusion of all others. The following four cases which proved to be glanders are instructive upon point of dosage and the variability of the reactions.

Mule No. I. Injected 1 c.c. mallein.
Results. Local, thermic, and ophthalmic, *negative.*
Injected 2 c.c. mallein 10 days later.
Results. Thermic, *positive*: local and ophthalmic, *negative.*

Mule No. II. Injected 1 c.c mallein.
Results. Local, thermic, and ophthalmic, *negative.*
Injected 2 c.c. mallein nine days later.
Results. Local, *positive*: ophthalmic and thermic, *negative.*

Mule No. III. Injected 1 c.c. mallein.
Results. Local, thermal, and ophthalmic, *negative.*
Injected 2 c.c. seven days later.
Results. Local, *positive*; ophthalmic, *positive (slight)*; thermic, *negative.*

Mule No, IV. Injected 2 c.c. mallein.
Results. Local and thermic, *positive*: ophthalmic, *negative.*

Out of the total number of mules tested 993 had 1 c.c. mallein injected subcutaneously only. The double test was applied in 1451, of which 441 had 1 c.c. mallein injected subcutaneously, and 1010 had 2 c.c., while, in addition, 222 had the *Intra-dermo-palpebral* test applied.

As regards the ophthalmic test, I should like to emphasise the following points:—Out of the 1673 eyes examined in the course of applying the ophthalmic test I found (*a*) in 17.5% a catarrhal discharge from one or both eyes; (*b*) in 5% the membrana-nictitans and conjunctiva was pigmented black, and in 6.5% the pigment covered half the conjunctiva; (*c*) in 22% the conjunctival colour of one eye was much deeper than in its fellow, and in some instances the degree was most marked; the membrane of one looking like that of horse with enteritis, while the other was comparatively pale. Further, the membrane of the left eye was invariably the deeper colour of the two.

This phenomenon I have never seen in horse practice. It is needless to point out that these three conditions greatly hamper the clinician in his endeavour to interpret the ophthalmic reaction in mules.

Is glanders in the mule a curable disease? and if so does the antigenic action of mallein rise to the standard of a curative vaccine?

To give a direct answer to this question a larger experience in mule practice than the writer possesses is required. I will therefore content myself by recording a case which came under my notice, the merits or demerits of which must be judged for what they are worth.

Mule No. IV. Arrived with a bilateral nasal discharge somewhat suspicious looking, both submaxillary lymphatic glands swollen.

He was immediately placed under the mallein test and gave a *positive* local reaction, a very slight opthalmic reaction, and a *negative* thermic reaction.

For the first three days after injection the mule was very sick and off his feed, while the nasal discharge was greatly increased and non-glutinous. He was isolated and kept under observation.

In a fortnight the animal's condition was much improved, while the nasal discharge had nearly disappeared.

In a month, dating from the time of the first testing, he was tested again, and in addition this time the intra-dermal test was applied. The results were opthalmic *negative*, subcutaneous and thermic *very positive: intra-dermo-palpebral* as the attached photographs will show.

Again, it is worthy of notice—following the mallein an increased nasal discharge took place which lasted nearly a week; after which it gradually subsided and disappeared.

Fifty-five days later he was again tested—triple test—this time with *negative results* all round. The mule now is in the best of condition and health.

Finally, I append details of 22 mules isolated from over 900 mules at the depot which when tested gave variable *slight reactions*, and which were isolated for the purpose of testing again later.

August 12th, 1915.

No.	Pre-injection Temperatures.		Post-injection Temperatures. 12th hr.	15th hr.	18th hr.	24th hr.
1	100.2° F	102° F	101° F	102° F	101° F	102° F
2	99.7	99	101	99	101	101
3	99.8	99.3	99	99.3	100.4	100
4	101	100.4	100.2	100.4	101	99.8
5	100	100.5	100.2	100.5	100	99
6	101	100.1	100	100.1	100	100
7	99.9	100	99.8	100	99	99.8
8	100.2	100.4	99.9	100.4	100	100
9	100.1	100	99	100	99	99.1
10	100	101.3	100	101.3	100	100
11	100.1	101	100	101	99.7	99.5
12	99.9	100.3	100	101.3	100.2	101
13	99.7	101.2	98.8	101.2	100.1	101
14	98.8	101.3	99	101.3	100	100
15	99.1	101	99	101	100	101
16	99	100.9	99.8	100.9	100	99
17	99	100.8	99	100.8	99	99.9
18	99.7	100.2	99.8	100.2	100	99.3
19	99.8	100.3	99.8	100.3	99	100
20	98	98.9	100	98.9	99.3	99
21	99	99.8	99.9	99.8	100	100
22	100	100.2	100	100.2	100.1	100

In addition to mule No. 4, mule No. 21 was the only one which gave a suspicious reaction, and that local, the dimensions being 5 in. × 10 in. This

mule was tested 55 days later with complete negative results.

Condition of sub-maxillary glands and the nasal discharge prior to testing;—

	Enlarged sub-maxillary glands.	Nasal discharge.
No. 3	Unilateral.	Bilateral.
4	Bilateral	"
5	Nil	Unilateral.
6	Unilateral.	"
10	"	"
12	"	"
20	"	"
8	"	nil.
11	"	"
19	"	"

No. 1 & 2 Mule Depôts, Somerset.

ROYAL VETERINARY COLLEGE, LONDON.

LIST OF MEDALS, CLASS PRIZES, ETC., AWARDED AT THE OPENING OF THE SESSION, 1915-16.

COLEMAN PRIZES.—Silver medal: Mr. T. J. Bosworth; Bronze medal: Mr. W. R. McKinna; Certificate of merit: Mr. R H. Penhale.

CENTENARY PRIZES.—Class A: Mr. W. A. Williams; Class B: Mr. T. J. Lewis, Mr. F. C. Scott, aeq.; Class C: Mr. A. Carter; Class D: Mr. T. J. Bosworth.

ROYAL AGRICULTURAL SOCIETY'S MEDALS.—Silver medal: Mr. R. H. Penhale; Bronze medal: Mr. W. R. McKinna.

RALLI PRIZES IN PRACTICAL SURGERY.—1st Prize: Mr. W. Shipley; 2nd Prize: Mr. R. H. Penhale; 3rd Prize: Mr. W. R. McKinna.

Clinical Prizes.—Class A—1st Prize: Mr. J. McCunn; 2nd Prize: Mr. C. V. Dayus; 3rd Prize: Mr. G. N. Bushman.

Class B.—1st Prize: Mr. K. A. Miles; 2nd Prize: Mr. T. Le Q. Blampied; 3rd Prize: Mr. H. Cooper.

Class C.—1st Prize: Mr. S. C. J. Bennett; 2nd Prize: Mr. G. F. Watkins; 3rd Prize Mr. D. A. Gillmor.

Class D.—1st Prize: Mr. W. A. MacGregor; 2nd Prize: Mr. W. R. McKinna, Mr. G. E. Oxspring, aeq.; 3rd Prize: Mr. W. Shipley.

Class Prizes.—Class A.—Chemistry and Toxicology—1st Prize: Mr. R. L. Cornell; 2nd Prize: Mr. E. T. Fern; Practical Chemistry—1st Prize: Mr. R. L. Cornell; 2nd Prize: Mr. C. V. Dayus; Biology—1st Prize: Mr. W. A. Williams; 2nd Prize: Mr. R. L. Cornell; Minor Anatomy—1st Prize: Mr. W. A. Williams; 2nd Prize: Mr. J. McCunn.

Class B.—Anatomy—1st Prize: Mr. T. J. Lewis; 2nd Prize: Mr. F. C. Scott; Physiology—1st Prize: Mr. S. H. Pettifer; 2nd Prize: Mr. H. C. Driver; Histology—1st Prize: Mr. S. H. Pettifer; 2nd Prize: Mr. F. C. Scott.

Class C.—Pathology—1st Prize: Mr. D. A. Gillmor; 2nd Prize: Mr. G. C. Taylor; Hygiene—1st Prize: Mr. A. Carter; 2nd Prize: Mr. D. A. Gillmor; Materia Medica—1st Prize: Mr. A. Carter; 2nd Prize: Mr. D. A. Gillmor.

Class D.—Veterinary Medicine—1st Prize: Mr. T. J. Bosworth; 2nd Prize: Mr. R. H. Penhale; Surgery—1st Prize: Mr. R. H. Penhale; 2nd Prize: Mr. T. J. Bosworth.

ARMY VETERINARY SERVICE

We have received the following announcement officially for publication:—

A proposal, whereby Lieutenants A.V.C., T.F., and Special Reserve will be promoted Captain after twelve months mobilized service, with effect from the dates upon which such officers have completed, or will complete twelve months mobilized service, is receiving the earnest consideration of the responsible authorities.

Extract from *London Gazette*,

WAR OFFICE, WHITEHALL, Oct. 1.

REGULAR FORCES. ARMY VETERINARY CORPS.

Appointment of W. F. Morton to be temp. Lieut. is dated Aug. 27, 1914, and not as stated in *Gazette* of Sept. 24, 1914.

Temp. Lieut. W. F. Morton to be temp. Capt. Dated Aug. 27.

To be temp. Lieut.:—G. Whitehead. Dated Aug. 31.

Oct. 4.

Temp. Hon. Lieut. E. G. R. Fairholme to be a Dep. Asst. Director of Vet. Services (graded for purposes of pay as a Staff Capt.), and to be temp. Capt. while so employed. Dated Oct. 5.

Temp. Lieutenants to be temp. Captains:—
R. T. Davis. Dated Aug. 7.
J. Hill. Dated Sept. 7.
T. Hogg. Dated Sept. 11.
R. J. Little, H. J. Allen. Dated Sept. 23.

To be temp. Capt.:—J. Purdy. Dated Sept. 15.

To be temp. Lieut:—W. L. Flanagan. Dated Sept. 21.

To be temp. Qmr. with hon. rank of Lieut.:—W. H. Mawdsley. Dated Oct. 1.

TERRITORIAL FORCE. ARMY VETERINARY CORPS.

Oct. 1.

To be Capt. (temp.):—W. G. Evans. Dated March 1.

Lieuts. to be Captains:—
C. A. A. Ewin. Dated Aug. 8.
H. McVean. Dated Sept. 5.

Lieut. A. Scotson relinquishes his commission on account of ill-health. Dated Oct. 2.

The date of appointment of Lieut. W. Wordley is Nov. 19, 1914, and not as stated in *Gazette* of Dec. 25, 1914.

TERRITORIAL FORCE RESERVE.

Oct. 1.

Announcements regarding Capt. W. G. Evans which appeared in *Gazettes* of Feb. 26 and Mar. 1 are cancelled.

OBITUARY.

Vety.-Major GERALD HERBERT FENTON, late A.V.C.
Graduated, N. Edin.: April, 1874.

Major Fenton died on Oct. 2nd, aged 63.

Capt. JOHN STORIE, A.V.C. (T.F.), East Linton, Prestonkirk. 1875, N. Edin.: April, 1880.

Capt. Storie's death occurred on Oct. 4th, aged 59.

Professor EDWARD A. MINCHIN, F.R.S., Professor of Protozoology in the University of London, died at Selsey on Sept. 30. He had been ill for six weeks, and went to Selsey to pick up his strength in view of a presidential address which he was to have delivered at Manchester. He was vice-president of the Zoological Society, a member of the Sleeping Sickness Commission in Uganda in 1905, and was Demonstrator of Comparative Anatomy at Oxford from 1893 to 1900.—*The Daily Telegraph.*

PARLIAMENTARY.

In the House of Commons.

BOARDING OUT OF ARMY HORSES.

Mr. PETO asked the Under-Secretary for War whether, in view of the expense to the country of maintaining vast numbers of horses in the various horse-camps and the difficulty of keeping them in health in winter, he would consider the adoption of a system of boarding them out among selected farmers under the superintendence of county committees, and thus assist in food production?

Mr. TENNANT: The system of boarding out remount horses with farmers and others already obtains to a considerable extent on terms ranging from "meat for work" to 25/- per week according to the condition of the animals and the accommodation provided, and many of these horses are at work. General Officers Commanding-in-Chief will be directed to extend the system of issuing horses on "meat for work" terms as far as is possible and expedient.

As to the suggested appointment of County Committees, there were in the employment of the Remount Department many local gentlemen of "horsey" propensities with knowledge of horseflesh and horse-keeping, and it was not considered necessary in those circumstances which prevailed very widely all over the country to adopt Mr. Peto's suggestion.

VETERINARY DISPENSARIES.

Mr. BIRRELL, replying to a question asked by Mr. Ffrench, stated that the Irish Department of Agriculture had received a copy of a resolution passed by the County of Wexford Committee of Agriculture asking that legislation should be promoted with a view to the establishment of veterinary dispensaries. In view of the state of public business, it was not possible at present to entertain the suggestion.

ALLOWANCE ON MOTOR SPIRIT.

In the House of Commons, on Sept. 29th, in the discussion of Budget Resolutions, on the motion for the increase of Customs duty on imported motor spirit by 3d. per gallon:

Mr. J. O'CONNOR: I want to say a word or two on this Resolution in order to suggest that it would be a fitting opportunity to extend a concession to a very deserving class of persons similar to that which has been made to the medical profession. I think it is the eighty-sixth Section of the Act, 1909-10, which makes a concession on—

> "Motor spirit used to supply motive power to a motor car kept by a duly qualified medical practitioner while it is being used by him for the purpose of his profession."

There is another class of professional man who is probably in the same category as the medical practitioner that this Section is intended to benefit—I allude to the veterinary surgeon. No doubt a very good case was made for the reduction of this tax to the medical profession, because medical men are called upon to assuage human suffering and have to go long distances to attend patients suddenly attacked with some disease or other. I know this is the case in Ireland, and I think it is a right and proper thing to allow this reduction, and it was so considered by this House in 1910, when the members of the medical profession were given the benefit under that Act. Every argument that was used with regard to human suffering in order to give this benefit and concession to the medical profession may likewise be used on behalf of the veterinary surgeon. It is not because the object of the suffering is a dumb animal that the sympathies of the human heart are not excited as much as in the case of human suffering. Therefore I submit to the House that if there was a good reason in the past for making this concession to the medical profession, those good reasons equally apply to the case of the veterinary surgeons, who are called upon, very often late at night, to go long distances in order to administer to the wants of poor suffering dumb beasts. I submit that this occasion should be taken to remedy what I consider a mistake in the Act of 1909-10. I et me also point out to the House that the veterinary surgeon is affected by the Motor Tax and by the use of motor vehicles to a much greater extent than the medical profession and in a manner in which that profession is not affected at all. The veterinary surgeon has been affected in his business to some extent by the destruction of horse traffic and horse haulage. There are less horses than there used to be, and there will be less use for them in the future, and consequently less demand for the veterinary surgeon with regard to horses. That being so, I think this profession is entitled on that account to some consideration from this House. I do not think I shall make this appeal in vain. It is certainly a case worthy of the consideration of the Chancellor of the Exchequer, and I hope that he will avail himself of this opportunity of remedying what I believe to have been a mistake in the past.

Mr. MCKENNA: My hon. and learned Friend the Member for North Kildare (Mr. John O'Connor) will appreciate that if his views were adopted by the Government—I express no opinion on this point—they could not be adopted now on this Resolution, and it will have to be done subsequently in the Bill.

I think the hon. and learned Member's proposal would be much more appropriate as an Amendment to the Clause of the Bill dealing with this matter. We should then have our hands quite free to discuss this question when we get to the Bill. I say that without intending to convey any reply to my hon. and learned Friend, either positive or negative, with regard to the proposal he has made. I will, however, take this opportunity of saying that when we come to the fourteenth Resolution I shall propose to omit it.

Sir F. BANBURY: I think the suggestion of the hon. and learned Member for North Kildare is a very good one, and if he accedes to the suggestion made by the Chancellor of the Exchequer I shall be very pleased to support him at the proper time when he moves his Amendment to the Bill.

On the motion for an increase in the Excise duty of 3d. per gallon on motor spirit (Allowance): Resolution 14. "That the temporary increase of the duties on motor spirit shall not operate so as to increase the allowance or repayment in respect of the duty now made to persons using motor spirit for certain purposes."

Mr. MCKENNA: I beg to move, "That the House does not agree with the Committee in the said Resolution."

If this Resolution be now admitted, then automatically, in accordance with the provisions of the Act, the industries and the professions to which the abatement of half the Spirit Duty was allowed will still be entitled to that abatement.

Unless this Resolution is negatived, we could not hereafter consider freely the various deductions and modifications of the duty as it might affect particular trades and industries.

Question, "That this House doth agree with the Committee in the said Resolution," put, and negatived.

Dear Sir,—I think the veterinary profession should be very grateful to Mr. John O'Connor (M.P. for North Kildare), for his action, in the matter of rebate on motor spirit for veterinary surgeons. Report of the debate is enclosed.—Yours faithfully,

Naas. W. T. M. BROWNE, M.R.C.V.S.

Sir,—As many practitioners may have overlooked the fact that the Chancellor of the Exchequer gave encouragement to Mr. John O'Connor, M.P. for Kildare, when on the 29th ult. he asked to have veterinary surgeons placed on the same basis as the medical profession in the matter of the motor spirit tax, and I think it well to exhort each V.S. to *at once* approach the M.P. for his district asking them to support the amendment to which Mr. McKenna has promised a hearing when it will come up later on in the Finance Bill.

It would be erroneous to expect that M.P., and especially the Chancellor of the Exchequer, should be conversant

with our position, hence the necessity of posting them up on some strong points,

Amongst the many reasons for our claim I would suggest the following as going to show that we are as well entitled to the concession as the medical profession—if not more so.

(1) Our fees are more scanty, and now that farmers are about to be more generally taxed, the time is not opportune to seek from them extra payment in order to meet our increased cost of living, and a strike is out of the question—it would be most unpatriotic under present circumstances.

(2) Owing to sounder horse breeding there is not now one horse to be fired to the two hundred there were prior to the sound horse breeding scheme, which our profession was the first to advocate the introduction of.

(3) Motor traction has dealt us a very severe blow, the consequence being that our practice is chiefly confined to cattle, and as the latter are the farmers' principal stronghold, to meet the many needs, we deserve encouragement in our endeavours to combat the numerous ills to which they are prone, and thus promote the interests involved.

The decrease in the number of students attending Veterinary Colleges in latter years plainly shows the diminished prospects of the profession, and the necessity of the avoidance of anything which might tend to cause a dearth of veterinarians in the future.

Would it not be gratitude with a vengeance, for instance, to tax the motor spirit used by patriotic men who have voluntarily engaged, without fee or reward, to carry on the practices of veterinary surgeons who have gone to the front to "do their little bit?"

We all know how often our work is given free of charge to poor owners of animals.

I trust that before it will be too late members will exert themselves by speaking or writing M.P.—Yours truly,

Athy. 4th Oct. JOHN HOLLAND.

Patent Medicines.

Sir Henry Norman, M.P., chairman of the late Select Committee on Patent Medicines, has received from Dr. Cox, medical secretary of the British Medical Association, the following letter:

"At the recent annual representative meeting of this Association a report was presented by the Council of the Association detailing the recommendations of the Select Committee on Patent Medicines.

"The meeting passed the following resolution, which I was instructed to send to you:

That the representative body place on record its satisfaction with the recommendations of the Select Committee on Patent Medicines, and instruct the Council, as soon as it considers the time opportune, to take all necessary steps in pressing for legislation on the lines of the report.

"The meeting felt that the report of the committee was a very distinct advance on anything which has been done in connection with this subject previously, and was of the opinion that the report would be extremely valuable, and that the public and the medical profession owed a debt of gratitude to the Select Committee and to its chairman. I am to express the hope that when we get back to normal times we may have your support and influence in pressing upon the attention of Parliament the very serious evils which the report disclosed, and the necessity for dealing with them drastically on the lines therein suggested."

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
	Out-breaks (a)	Animals.	Out-breaks (a)	Animals.	Out-breaks (b)	Animals.	Out-breaks (b)	Animals.	(b)	Out-breaks (a)	Slaughtered. *
GT. BRITAIN. Week ended October 2	4	5					12	31	1	45	125
Corresponding week in 1914 ...	11	11			1	1	‡	‡		115	692
Corresponding week in 1913 ...	9	11			1	1	17	22	2	36	357
Corresponding week in 1912 ...	10	10		2	2	4	19	25	3	26	409
Total for 40 weeks, 1915	446	508			36	66	‖640	‖1385	165	3208	14045
Corresponding period in 1914 ...	568	623	22	108	82	250	‡1530	‡2642	155	3272	31760
Corresponding period in 1913 ...	420	464			122	299	2016	4021	136	1904	25344
Corresponding period in 1912 ...	604	685	81	635	141	260	2434	5214	180	2371	31406

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.

(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked:

Board of Agriculture and Fisheries, October 5, 1915 ‖ Figures for twenty-seven weeks only.

IRELAND. Week ended Oct. 2	...	...	...	...	...	...	Outbreaks 1	5	4	20
Corresponding Week in 1914 ...	...	...	...	...	...	...	1	2	2	3
Corresponding Week in 1913 ...	...	...	...	...	...	...	3	3	1	1
Corresponding Week in 1912 ...	...	...	1	1	...	...	2	4	4	15
Total for 20 weeks, 1915 ...	1	1	...	...	1	3	59	320	197	1120
Corresponding period in 1914 ...	1	1	76	957	...	...	68	409	163	845
Corresponding period in 1913 ...	...	...	...	...	...	...	105	397	117	542
Corresponding period in 1912 ...	3	3	30	264	...	...	55	270	190	1532

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Oct. 4, 1915.

NOTE.—The figures for the Current Year are approximate only. * As diseased or Exposed to Infection.